Protocols

Instrument Construction, Site Selection, and Set-Up

Selecting a convenient site is critical for daily data collection.

Cloud Protocols

Students estimate the amount of cloud and contrail cover, observe which types of clouds are visible, and count the number of each type of contrail.

Aerosols Protocol

Students use a red/green sun photometer to measure the amount of sunlight reaching the ground when clouds do not cover the sun.

Water Vapor Protocol

Students use a near-infrared sun photometer to measure the amount of sunlight reaching the ground at wavelengths that are correlated to water vapor.

Relative Humidity Protocol

Students measure the relative humidity using either a digital hygrometer or a sling psychrometer.

Precipitation Protocols

Students measure daily rainfall using a rain gauge, daily snowfall using a snow board, total snow accumulation on the ground, the equivalent depth of rain for both new snow and snow pack, and use techniques from the *Hydrology Investigation* to measure pH of rain and melted snow.

Digital Multi-Day Max/Min/Current Air and Soil Temperature

Students use a digital multi-day maximum/minimum thermometer mounted in their instrument shelter to measure the maximum and minimum air and soil temperatures for up to six previous 24-hour periods.

Maximum, Minimum, and Current Temperature Protocol

Students use a maximum/minimum thermometer mounted in their instrument shelter to measure current temperature and the maximum and minimum temperatures for the previous 24 hours. Students also may collect current temperature only.

Surface Temperature Protocol

Students use an infrared thermometer (IRT) to measure the temperature of Earth's surface.

Ozone Protocol

Students expose a chemically sensitive strip to the air for an hour and determine the amount of ozone present using an ozone strip reader.

*Optional Automated Weather Station Protocols**

Students use an automated weather station to measure barometric pressure, relative humidity, rain rate and amount, air temperature, and wind speed and direction every 15 minutes.

*Optional Barometric Pressure Protocol**

Students use an aneroid barometer to measure barometric pressure in support of the *Aerosols* and *Water Vapor Protocols.*

*Optional Automated Soil and Air Temperature Monitoring Protocol **

Students use a data logger and temperature sensors to measure air temperature and soil temperature at 5, 10, and 50 centimeter depths every 15 minutes for extended time periods.

*Optional AWS Weather Net Protocol**

Students define their school's AWS Weather Net station as a GLOBE Atmosphere Study Site and arrange for GLOBE to retrieve a copy of the data from their station to include in the GLOBE data archive.

* See the full e-guide version of the *Teacher's Guide* available on the GLOBE Web site and CD-ROM.